CHAPTER 1 INTRODUCTION

SECTION I—GENERAL

1.1.1 Purpose

This manual provides technical guidance for the maintenance and repair of buildings and structures at military installations. These standards should assist in the economical preservation of structures and insure their continuous and efficient use. Criteria for engineering procedures to cover maintenance and repair work that is within the responsibility of maintenance personnel.

1.1.2 Scope

The military services are required to maintain both recently constructed structures and historic structures which require special techniques to preserve the original appearance. In addition, some installations with temporary World War II era buildings are maintained only to the degree required to prevent further deterioration. For these reasons, some obsolete products and their maintenance are discussed in this manual although these products are in many cases no longer available. This manual is a technical reference document and procedures and material selections are suggested, not mandated. This manual is not to be interpreted as superseding or negating requirements of other publications.

1.1.3 Restrictive Clauses (US Air Force Only)

This publication contains implied or direct restrictive clauses. Take these clauses as recommendations only.

SECTION II—DEFINITIONS

"Buildings" and "structures" are defined separately in this section, but throughout this manual the term "structures" will be used collectively to include buildings.

1.2.1 Buildings

A building is a roofed or walled structure intended for use as a dwelling. Building is a broad term which includes troop housing, family housing, dining, training, medical, religious, recreational, community, administrative, technical, industrial, and storage facilities. Specialized buildings such as hangars, maintenance docks, test cells and underground buildings are also included.

1.2.2 Structures

A structure in this manual describes something which is not intended to act as a dwelling for personnel. The broad term includes, sheds, elevated storage tanks, underground storage facilities, flagpoles, towers, walls, fences, gates, swimming pools, and frames that support equipment.

1.2.3 Maintenance

Maintenance is the recurrent, day-to-day, periodic, or scheduled work required to preserve a real

property facility for the effective utilization of its designated purposes. Includes work undertaken to prevent damage to a facility which otherwise would be more costly to restore.

1.2.4 Repair

Repair is defined as the restoration of a real property facility for the effective utilization for its designated purposes, by overhaul, reprocessing or replacement of constituent parts or materials deteriorated by action of the elements or wear and tear in use. Includes the parts and materials and which have not corrected through maintenance.

1.2.5 Installation Engineer

The term "installation engineer" as used in this manual refers to the senior engineering officer (military or civilian) serving as the principal staff officer of the installation commander for maintenance and repair of real property. In each military department, the installation engineer is known under a different title: Navy—Public Works Officer, Air Force—Base Civil Engineer, and Army—Facilities Engineer.

SECTION III—WORK EXCLUDED

Items which are related to the maintenance and repair of structures but not included in this manual are as follows:

1.3.1 Waterfront Structures

Wharves, quays, piers, bulkheads, quay walls, breakwaters, jetties, groins, and related structures are included in the Tri-Services manual, "Maintenance of Waterfront Structures" (TM 5-622, NAVFAC MO-104, AFP 91-34).

1.3.2 Painting

The selection and application of paints and protective coatings are included in the Tri-Services manual, "Paints and Protective Coatings" (TM 5-618, NAVFAC MO-110 AFP 85-3).

1.3.3 Roofing

The selection, application, maintenance and repair of all types of roofing are included in the Tri-Services manual, "Maintenance and Repair of Roofs" (TM 5-617, NAVFAC MO-113 and MCO P11014.9, AFP 91-31).

1.3.4 Bridges and Culverts

The maintenance and repair of all types of bridges nd culverts are included in the Tri-Service Manual, "Maintenance and Repair of Surface Areas" (TM 5-624, NAVFAC MO-102, AFP 85-8). Inspection information and ratings for all types of bridges are provided in the manual, "Maintenance Inspection of Bridges," 1978, prepared by the American Association of State Highway and Transportation Officials.

1.3.5 Other Exclusions

Electrical (includes lighting), plumbing, heating, ventilation, and air-conditioning are covered by various Tri-Service manuals.

SECTION IV—STANDARDS OF MAINTENANCE

1.4.1 General

Desirable maintenance standard is the level at which a facility can be economically maintained to protect the Government's investment and to provide a functional facility. Failure to maintain the facility at this level may result in expensive repair costs.

- 1.4.1.1 Material which are more durable and provide a longer life may be substituted for original materials provided the economic considerations justify the increased costs.
- 1.4.1.2 The standards set forth in this manual are for active and inactive installations. Specific maintenance criteria for inactive installations, or parts thereof, are prescribed in pertinent regulations of each military service. See appendix A.

1.4.2 Standards for Structures

1.4.2.1 Permanent, semipermanent, and temporary structures will be maintained to provide substantially

the same capacity, efficiency, and standard of appearance and comfort for which they were originally designed, consistent with their planned use and life expectancy.

- 1.4.2.2 Structural components, such as foundations, columns, trusses, structural frames and connections, will be maintained regularly and in such a manner as to insure preservation and stability of structures.
- 1.4.2.3 Exterior and interior surface materials and finishes will be maintained to eliminate defects, to prevent damage, and to keep the facility in good operational and sanitary condition.
- 1.4.2.4 The maintenance of all structures not scheduled for retention as part of the permanent installation will be commensurate with the planned use and economical life expectancy of such facilities.

SECTION V—MAPS, PLANS, AND BUILDING NUMBERING

1.5.1 Maps

Installation maps and overlays showing structures, roads, electric services, and utility lines will be maintained in accordance with pertinent regulations of each military service. Maps are to be maintained in a current status by careful revision and addition. Copies of these maps should be readily available to maintenance personnel.

1.5.2 Plans

Original plans and specifications of structures constitute the permanent record of construction and materials. "Record" plans will continually be updated to accurately record changes, additions, and deletions. Copies of these plans should be readily available to maintenance personnel.

1.5.3 Building Numbering

Each self-contained structure is assigned a number which is clearly marked in accordance with pertinent regulations of each military department. Then location and numbering of all structures will be maintained in the basic information folder or facility history file.

SECTION VI—TIMELY REPAIR

1.6.1 General

All maintenance personnel shall be indoctrinated with the importance of not only the method of repair, but also the timely recognition and correction of the basic cause of failure. Some portion of maintenance is necessary due to normal wear and weathering, but many failures may be traced to other basic causes. Correction of these will, over a relatively short period, be justified by decreased maintenance as well as improved factors of use, safety, and appearance.

1.6.2 Causes

Premature failure of structural parts, materials, and various components may be caused by some of the following:

- a. Defective materials or structural parts.
- b. Incorrect installation or application.
- c. Failure of related, connected, or adjacent components.
- d. Unusual or extreme climatic conditions exceeding the design specifications for which the material or structural part was designed.

1.6.3 Investigation

Failures occurring during the normal life expectancy of buildings and structures should be carefully investigated and the fundamental defects corrected prior to superficial repair.

1.6.4 Technical Assistance

Unless the cause of failure is immediately discernible and corrective measures are straightforward or standard, the installation engineer, or higher echelons if necessary, should be consulted for advice on corrective measures.

1.6.4.1 Where specific materials are concerned, such as composition flooring and siding, the manufacturer's specifications and instructions may provide sufficient information for corrective measures. Where there is doubt as to the cause of failure, it is advisable for the installation engineer to request assistance from the major command or the manufacturer's agent.

1.6.4.2 In vital structural matters or material failures, beyond the capabilities of or time limitations imposed upon the installation engineering personnel, consultation and advice from qualified, private architects or engineers may be obtained upon approval by appropriate military department authority.

1.6.4.3 Individuals engaged in repair of architectural and structural elements should be aware of electrical (including lighting), plumbing, heating, ventilating and air-conditioning systems as they impact on these repairs. Specific repairs should be coordinated with other elements to insure that repairs do not create adverse conditions in the continuance of service provided by the systems.